

– Abstract –

Lumbar Spinal Fusion with Pedicle Screw Fixation in the Elderly Patients

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Study Design : A retrospective study was performed in elderly patients undergoing lumbar spinal fusion using pedicle screw fixation.

Objectives : To investigate perioperative complications and surgical outcomes in elderly patients who underwent lumbar spinal fusion with pedicle screw fixation.

Summary of Literature Review : There have been few reports regarding the lumbar spinal fusion using pedicle screws in the elderly, especially in the Korean literature.

Materials and Methods : Thirty-three patients over 60 years of age who underwent decompression and instrumented fusion with pedicle screws were retrospectively evaluated. Minimum follow-up was 2 years. We reviewed medical records and radiological films. We studied age, sex, lesion site, duration of hospital stay, operating time, amount of transfusion, clinical outcomes, complications, preoperative co-morbidity, fusion level, time at which fusion was complete, and fusion rate.

Results : The 33 patients consisted of 13 male and 20 female patients. Mean age was 63.8 (60-74) years. Preoperative diagnoses were spinal stenosis, 23, degenerative spondylolisthesis, 8, and spondylolytic spondylolisthesis, 2. Twenty-one cases involved single level and 12 cases involved multiple levels. Sixteen patients had 12 co-morbidities. The mean fusion segments were 1.5 (1-3) segments. The mean operating time was 204.7 (115-330) minutes. The mean amount of transfusion was 2.5 (0-6) pints. The mean duration of hospital stay was 17.8 (13-29) days. Satisfactory clinical outcomes were found in 27 patients (81.8%). Fusion rate was 93.8%. The time at which fusion was complete was 5.6 (3-12) months. Complication rate was 21.2%. Mortality rate was 3.0%. There was a high postoperative complication rate in patients who had had medical problems before the operation, which was statistically significant.

Conclusions : Pedicle screw fixation in patients over 60 years was a useful method for the treatment of degenerative spinal disorders. However, patients with preoperative co-morbidity showed a very high medical complication rate. Therefore, careful perioperative management was recommended in high-risk elderly patients with preexisting medical problems.

Key Words : Lumbar spinal fusion, Pedicle screw fixation, Elderly patients

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Fishers exact test

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Table 1. Criteria for clinical results

| | |
|-----------|--|
| Excellent | Complete relief of pain in back and lower limb No limitation of physical activity Analgesics not used Able to squat on the floor |
| Good | Relief of most of pain in back and lower limb Able to return to accustomed employment Physical activities slightly limited Analgesics used only infrequently Able to squat on the floor |
| Fair | Partial relief of pain in back and lower limb Able to return to accustomed employment with limitation, or return to lighter work Physical activities definitely limited Mild analgesic medication used frequently Mild limitation to squat on the floor |
| Poor | Little or no relief of pain in back and lower limb Physical activities greatly limited Unable to return to accustomed employment Analgesic medication used regularly Unable to squat on the floor without support |

Kim NH and Kim DJ : Orthopedics 14:1069, 1991.

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Kim Kim

(Table 1)

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Fig. 1. Postoperative four-year follow-up anteroposterior radiography of a 67-year-old man with spinal stenosis treated with decompression, posterolateral fusion, and pedicle screw fixation.

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2). 115 330 204.7
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2.5
13 29 17.8
27 , 81.8%
93.8%, 3
12 5.6 (Table 2).
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가 1 21.2%
3.0% (Table 3).



Fig. 2-A. Preoperative anteroposterior radiography of a 65-year-old woman with degenerative spondylolisthesis and end-stage renal failure shows right side degenerative scoliosis. The CAPD(continuous ambulatory peritoneal dialysis) line is also visible.
B. Preoperative lateral radiography of the lumbar spine shows degenerative spondylolisthesis of L2 and L4.
C. Postoperative anteroposterior radiography of the lumbar spine shows good correction of scoliotic curve.
D. Postoperative lateral radiography of the lumbar spine shows restoration of good sagittal balance. The patient died of acute peritonitis and sepsis on the fourth postoperative day.

Table 2. Overall results

| | Mean(Range) |
|--|----------------|
| Operating time(min) | 204.7(115-330) |
| Amount of transfusion(pint) | 2.5(0-6) |
| Duration of hospital stay(day) | 17.8(13-29) |
| Time at which fusion was complete(month) | 5.6(3-12) |
| Satisfactory clinical outcome(%) | 81.8 |
| Fusion rate(%) | 93.8 |

Table 3. Complications

| | Number of cases |
|----------------------------------|-----------------|
| Atelectasis | 1 |
| Myocardial ischemia | 2 |
| Deep vein thrombosis | 1 |
| Urinary tract infection | 1 |
| Acute peritonitis, sepsis, death | 1 |
| Metal failure | 1 |

가 (Chi-square = 154.687, P = 0.033).

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81.8%
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(Fig. 2).
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Knodt rod
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86%
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Fisher's exact test

(P < 0.033).

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 8 , 2 21 , 12 1.5
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 17.8 . 27 (81.8%) 93.8% 5.6
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